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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

	Application No.	Applicant(s)
	10/535,621	LI ET AL.
Office Action Summary	Examiner	Art Unit	
	JAMES PONTIUS	2621	

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS,
WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>20 May 2005</u>.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1-33</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>1-33</u> is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on <u>20 May 2005</u> is/are: a)☐ accepted or b)☒ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☒ All b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage
application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☒ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date <u>10/13/2005; 06/16/2006</u>.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.

5)☐ Notice of Informal Patent Application

6)☐ Other: _____.

DETAILED ACTION

Drawings

1.   Figures 2 and 15 should be designated by a legend such as --Prior Art-- because

only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in

compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid

abandonment of the application. The replacement sheet(s) should be labeled

"Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct

any portion of the drawing figures. If the changes are not accepted by the examiner, the

applicant will be notified and informed of any required corrective action in the next Office

action. The objection to the drawings will not be held in abeyance.

Claim Objections

2.   Claim 4 is objected to because of the following informalities: the phrase

"according to claims 2" should read "according to claim 2". Appropriate correction is

required.

3.   Claim 9 is objected to because of the following informalities: Claim 9 depends on

claim 8, claim 8 depends on claim 6, and claim 6 depends on claim 1, but claim 9

makes reference to all preceding claims. This is improper dependant claim format.

Appropriate correction is required.

4.   Claim 9 is objected to under 37 CFR 1.75(c), as being of improper dependent

form for failing to further limit the subject matter of a previous claim. Applicant is

required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper

dependent form, or rewrite the claim(s) in independent form.

5.   Claim 11 is objected to because of the following informalities: the preamble of

claim 11 indicates that the claim is an independent claim, however the body of claim 11

indicates that the claim is a dependant claim by referencing preceding claims.

Examiner considered claim 11 as if the claim was independent. Appropriate correction

is required.

Claim Rejections - 35 USC § 101

6.   35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of
> matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the
> conditions and requirements of this title.

7.   Claims 1-10 are rejected under 35 U.S.C. 101 as not falling within one of the four

statutory categories of invention. Supreme Court precedent and recent Federal Circuit

decisions indicate that a statutory "process" under 35 U.S.C. 101 must (1) be tied to

another statutory category (such as a particular apparatus); or (2) transform underlying

subject matter (such as an article or material) to a different state or thing. While instant

claims 1-10 recite a series of steps or acts to be performed, the claim neither transforms

underlying subject matter nor is positively tied to another statutory category that

accomplishes the claimed method steps, and therefore does not qualify as a statutory

process. For example, it is unclear what performs, in electronic form the decoding,

selecting, calculating, excluding, testing, outputting, comparing, accumulating, and

interpolating steps recited in the method claims.

8.   Claims 11-16 are rejected under 35 U.S.C. 101 as not falling within one of the

four statutory categories of invention. Supreme Court precedent and recent Federal

Circuit decisions indicate that a statutory "process" under 35 U.S.C. 101 must (1) be tied

to another statutory category (such as a particular apparatus); or (2) transform

underlying subject matter (such as an article or material) to a different state or thing.

While instant claims 11-16 recite a series of steps or acts to be performed, the claim

neither transforms underlying subject matter nor is positively tied to another statutory

category that accomplishes the claimed method steps, and therefore does not qualify as

a statutory process. For example, it is unclear what performs, in electronic form the

determining, generating, selecting, accumulating, warping and calculating steps recited

in the method claims.

9.   Claim 1-16 are rejected under 35 U.S.C. 101 because invention is directed

towards non-statutory subject matter (Please see the MPEP 2106 Section IV.

Determine Whether the Claimed Invention Complies with 35 U.S.C. 101). The

specification at page 12, lines 11-17, indicates that the invention can be implemented in

software. Since the software is not embodied within a computer readable medium, the

invention is directed towards non-statutory subject matter.

Claim Rejections - 35 USC § 102

10.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by
> another filed in the United States before the invention by the applicant for patent or (2) a patent
> granted on an application for patent by another filed in the United States before the invention by the
> applicant for patent, except that an international application filed under the treaty defined in section
> 351(a) shall have the effects for purposes of this subsection of an application filed in the United States
> only if the international application designated the United States and was published under Article 21(2)
> of such treaty in the English language.

11.   Claims 11-14 are rejected under 35 U.S.C. 102(e) as being anticipated by

Jinzenji et al. (US Patent # 6,977,664 B1).

12.   Regarding claim 11, Jinzenji discloses:

A method of generating panoramic images from a motion-compensated inter-frame

encoded video sequence, the method comprising:

for each frame of the sequence, determining the global motion of each frame with

respect to its anchor frame using the method of any of the preceding claims (Jinzenji col

8, line 32-56; global motion is obtained in step 1); and

generating at least one panoramic image representing the frames of the video

sequence using the global motion estimations thus determined (Jinzenji col 8, line 32-

56; a provisional sprite <panoramic image> is generated).

13.   Regarding claim 12, Jinzenji discloses:

A method according to claim 11, wherein the generating step further comprises:

selecting a particular frame of the sequence as a reference frame, the plane of

the reference frame being a reference plane (Jinzenji col 8, line 32-56; the reference

coordinate system which is for the reference frame);

for each frame other than the reference frame, accumulating the global motion

estimations from each frame back to the reference frame (Jinzenji col 8, line 32-56;

each original image of the arbitrary frames is mapped to a reference coordinate system

which is for the reference frame);

warping each frame other than the reference frame onto the reference plane

using the accumulated global motion estimations to give one or more pixel values for

each pixel position in the reference plane (Jinzenji col 8, line 32-56; frame warping

occurs when frames are mapped to the reference coordinate system using global

motion so as to insert or overwrite pixels; and

for each pixel position in the reference plane, selecting one of the available pixel

values for use as the pixel value in the panoramic image (Jinzenji col 8, line 32-56; a

pixel value of a point is obtained from pixel values which exist in the same point).

14.   Regarding claim 13, Jinzenji discloses:

A method according to claim 12, wherein the selecting step comprises selecting

a substantially median pixel value from the available pixel values for use in a

background panoramic image (Jinzenji col 10, line 8-11; for a plurality of pixels which

are mapped to the same coordinates, a median value of the pixels is selected as the

value of the coordinates of the provisional sprite).

15.   Regarding claim 14, Jinzenji discloses:

        A method according to claim 12, wherein the selecting step comprises selecting

a substantially most different pixel value from the available pixel values for use in a

foreground panoramic image (Jinzenji col 8, line 47-51; using a threshold to select the

most different pixel).

Claim Rejections - 35 USC § 103

1.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

2.   Claims 1, 5, 17, 21 and 32-33 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Oh et al. (International Pub. No. WO 00/70879) in view of Meer et al.

(Meer et al., "Robust Regression Methods for Computer Vision: A Review", International

Journal of Computer Vision, 6(1):59-70, 1991).

3.　　　Regarding claim 1,

Oh teaches:

A method of global motion estimation between frames of a motion-compensated inter-frame encoded video sequence, each frame of the sequence having a plurality of motion vectors encoded therein relating the frame to a preceding and/or succeeding frame of the sequence; the method comprising, for a particular inter-frame encoded frame:

a) decoding the motion vectors of the frame (Oh: pg 10, lines 26-28: All necessary motion vectors. . . are detected by the adaptive motion estimator; pg 17, lines 26-29: the principles of the invention can be incorporated in an integrated circuit for encoding/decoding video data;);

b) selecting N sets of the motion vectors, wherein N is an integer value greater than 1 (Oh: pg 12, lines 24-30: In this particular embodiment, three global motion vectors are computed: one representing the average motion vector of the whole row, the other two global motion vectors representing two sub-groups of MBs from the row differentiated by some motion characteristics; pg 13, lines 4-7: separate the MB motion vectors into two groups, Group1 and Group2;);

c) calculating a motion estimation for each set (Oh: pg 12, line 19-22: The global motion estimator 203 is coupled to provide data to the motion characteristics analyser and the motion estimators 204, 205, 206, 207;);

d) calculating a error value for each motion estimation (Oh: pg 11, line 4-6; The matching criterion may be based on minimum of absolute errors, square errors, or other suitable distortion functions;); and

e) selecting the motion estimation as that representative of the global motion of the frame with respect to a preceding or succeeding anchor frame (Oh: pg 14, line 24-26: The two best macroblock matching predictions obtained from the two search windows are compared and the one giving the best prediction is chosen, with the corresponding MB motion vector assigned to the current MB;).

Oh fails to teach:

d) calculating a **median squared error value** for each motion estimation; and

e) selecting the motion estimation **with the least median squared error value** as that representative of the global motion of the frame with respect to a preceding or succeeding anchor frame.

Meer teaches:

d) calculating a **median squared error value** for each motion estimation (Meer: pg 62, right col); and

e) selecting the motion estimation **with the least median squared error value** as that representative of the global motion of the frame with respect to a preceding or succeeding anchor frame (Meer: pg 62, right col).

At the time of invention, it would have been obvious to a person having ordinary skill in the art to combine the teachings of Meer with Oh. The teachings of Meer both identifies "outliers", that is points severely deviating from the model, and discriminates against these points (Meer: pg 62, right col), thereby optimizing the ability of Oh to generate accurate global motion in the presence outliers.

4.   Regarding claim 5,

Meer teaches:

A method according to claim 1, wherein the selecting step b) further comprises randomly selecting s motion vectors from the available motion vectors for each of the N sets (Meer: pg 64, left col: Subsets of the data are chosen by random sampling) wherein s is the minimum number for sufficiently estimating a geometrical transformation (Meer: pg 64, left col: The points within some error tolerance are called the consensus set of the model. If the cardinality, number of points, of the consensus set exceeds a threshold, the model is accepted and its parameters recomputed based on the whole consensus set. By using a threshold, a minimum number of motion vectors must be used. The error tolerance and the consensus set acceptance threshold must be set a priori, and can be set according to any minimum level, including the minimum number for sufficiently estimating a geometrical transformation.).

At the time of invention, it would have been obvious to a person having ordinary skill in the art to combine the teachings of Meer with Oh. The teachings of Meer

chooses subsets of data by random sampling, thereby minimizing the cost function of

the Oh method and apparatus (Meer: pg 64, left col).

16.   Regarding claim 17, Oh in view of Meer discloses the system limitations of this

claim as discussed above with respect to claim 1.

17.   Regarding claim 21, Oh in view of Meer discloses the system limitations of this

claim as discussed above with respect to claim 5.

5.   Regarding claim 32,

Oh teaches:

        A computer program or suite of programs arranged such that when executed on

a computer system the program or suite of programs causes the computer system to

perform the method of claim 1 (Oh: pg 17, line 29 – pg 18, line 1).

6.   Regarding claim 33,

Oh teaches:

        A computer readable storage medium storing a computer program or suite of

programs according to claim 32 (Oh: pg 17, line 29 – pg 18, line 1).

7.   Claims 2-4 and 18-20 are rejected under 35 U.S.C. 103(a) as being unpatentable

over Oh et al. (International Pub. No. WO 00/70879) in view of Meer et al. (Meer et al.,

"Robust Regression Methods for Computer Vision: A Review", International Journal of

Computer Vision, 6(1):59-70, 1991) as applied to claim 1 above, and further in view of

Smolic et al. (Smolic et al., "Long-Term Global Motion Estimation and its Application for

Sprite Coding, Content Description, and Segmentation", IEEE TRANSACTIONS ON

CIRCUITS AND SYSTEMS FOR VIDEO TECHNOLOGY, Vol. 9, No. 8, December

1999, pages 1227-1242, XP0009333894).

8.   Regarding claim 2,

Oh in view of Meer teaches:

        A method according to claim 1 (as shown above)

Oh in view of Meer fails to teach:

        the step of excluding certain motion vectors with predetermined characteristics

from being selected as a member of one of the N sets.

Smolic teaches:

        the step of excluding certain motion vectors with predetermined characteristics

from being selected as a member of one of the N sets (Smolic: pg 1231, right col, first

paragraph).

        At the time of invention, it would have been obvious to a person having ordinary

skill in the art to combine the teachings of Smolic with Oh in view of Meer. Excluding

motions vectors would reduce the computational complexity of the Oh in view of Meer method and apparatus (Smolic: pg 1231, right col, first paragraph).

9.   Regarding claim 3,

Smolic teaches:

   wherein the excluded motion vectors include those motion vectors from one or more areas substantially around the boundary of the frame (Smolic: pg 1231, right col, first paragraph: we exclude some points along the image border and along the object border.).

10.   Regarding claim 4,

Smolic teaches:

   wherein the excluded motion vectors include those motion vectors whose value is substantially zero (Smolic: pg 1231, right col, first paragraph: we evaluate only points where the spatial intensity derivatives have nonzero values).

18.   Regarding claim 18, Oh in view of Meer and further in view of Smolic discloses the system limitations of this claim as discussed above with respect to claim 2.

19.   Regarding claim 19, Oh in view of Meer and further in view of Smolic discloses the system limitations of this claim as discussed above with respect to claim 3.

20.   Regarding claim 20, Oh in view of Meer and further in view of Smolic discloses

the system limitations of this claim as discussed above with respect to claim 4.

11.   Claims 6-9 and 22-24 are rejected under 35 U.S.C. 103(a) as being unpatentable

over Oh et al. (International Pub. No. WO 00/70879) in view of Meer et al. (Meer et al.,

"Robust Regression Methods for Computer Vision: A Review", International Journal of

Computer Vision, 6(1):59-70, 1991) as applied to claim 1 above, and further in view of

Subramaniyan et al. (US Patent Application Publication # 2004/0028134 A1).

12.   Regarding claim 6,

Oh in view of Meer teaches:

        A method according to claim 1 (as shown above)

Oh in view of Meer fails to teach:

        the steps of:

        c) testing the selected motion estimation representative of the global motion ; and

        d) outputting the selected motion estimation as being representative of the global

motion of the frame if the test is passed.

Subramaniyan teaches:

        the steps of:

c) testing the selected motion estimation representative of the global motion

(Subramaniyan: [0035], comparing the difference metric for each of the final motion

vectors in the previous frame with a predetermined threshold; [0049], This process

continues until one of 3 conditions are met: [0050], CONDITION 1: The MSAD is below

a threshold THRESH4, given by: THRESH4=A*Q+B); and

d) outputting the selected motion estimation as being representative of the global

motion of the frame if the test is passed (Subramaniyan: [0035], determining the global

motion vector based on the each of the final motion vectors in a previous frame with a

difference metric that is below the threshold; [0049], This process continues until one of

3 conditions are met: [0050], CONDITION 1: The MSAD is below a threshold

THRESH4, given by: THRESH4=A*Q+B).

At the time of invention, it would have been obvious to a person having ordinary

skill in the art to combine the teachings of Subramaniyan with Oh in view of Meer.

Testing the global motion estimation before outputting would improve the Oh in view of

Meer method and apparatus by achieving a motion estimation that is high quality while

remaining low in complexity (Subramaniyan: [0023]).

13.   Regarding claim 7,

Subramaniyan teaches:

wherein the test comprises comparing the selected motion estimation with a

threshold value (Subramaniyan: [0049]-[0050], THRESH4), wherein the test is passed if

the parameters do not exceed the threshold value (Subramaniyan: [0049]-[0050], [0054]

The best MV at the end of the second stage is chosen as the best MV for the

macroblock; the MV having a MSAD below THRESH4 is chosen as the best MV).

14.   Regarding claim 8,

Subramaniyan teaches:

  wherein if the test is failed, the method further comprises:

  e) determining a motion estimation representative of the global motion of the

frame with respect to a preceding or succeeding other frame (Subramaniyan: [0035];

[0026], motion estimation is computed for blocks of image data from a current image

frame using one or more previously processed image frames);

  f) determining a motion estimation representative of the global motion of the

other frame with respect to the anchor frame ([0035]; the motion estimation circuit 110

can determine the global motion vector by using an average of all final motion vectors in

a previous frame); and

  g) accumulating the motion estimations to give an overall motion estimation

substantially representative of the global motion of the frame with respect to the anchor

frame (Subramaniyan: [0035], the motion estimation circuit 110 can determine the

global motion vector by using an average of all final motion vectors in a previous frame).

15.   Regarding claim 9,

Subramaniyan teaches:

wherein the determining steps e) and f) each comprise a method substantially in accordance with any of the preceding claims (Subramaniyan: [0035]; [0026], motion estimation is computed for blocks of image data from a current image frame <u>using one or more previously processed image frames</u>) ([0035]; the motion estimation circuit 110 can <u>determine the global motion vector</u> by using an average of <u>all final motion vectors in a previous frame</u>).

21.   Regarding claim 22, Oh in view of Meer and further in view of Subramaniyan discloses the system limitations of this claim as discussed above with respect to claim 6.

22.   Regarding claim 23, Oh in view of Meer and further in view of Subramaniyan discloses the system limitations of this claim as discussed above with respect to claim 7.

23.   Regarding claim 24, Oh in view of Meer and further in view of Subramaniyan discloses the system limitations of this claim as discussed above with respect to claim 8.

16.   Claims 10 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oh et al. (International Pub. No. WO 00/70879) in view of Meer et al. (Meer et al., "Robust Regression Methods for Computer Vision: A Review", International Journal of

Computer Vision, 6(1):59-70, 1991) and Subramaniyan et al. (US Patent Application

Publication # 2004/0028134 A1) as applied to claim 6 above, and further in view of Lee

et al. (US Patent Application Publication # 2003/0103568 A1).

17.   Regarding claim 10,

Oh in view of Meer and Subramaniyan teaches:

        A method according to claim 6 (as shown above)

Oh in view of Meer and Subramaniyan fails to teach:

        wherein if the test is failed, the method further comprises:

        interpolating between the motion estimations of adjacent frames to give an

interpolated motion estimation which is then output as the motion estimation

representative of the global motion of the frame.

Lee teaches:

        wherein if the test is failed, the method further comprises:

        interpolating between the motion estimations of adjacent frames to give an

interpolated motion estimation which is then output as the motion estimation

representative of the global motion of the frame (Lee: [0061]-[0063]).

        At the time of invention, it would have been obvious to a person having ordinary

skill in the art to combine the teachings of Lee with Oh in view of Meer and

Subramaniyan. The teachings of Lee provide for motion compensated interpolation that eliminates blocking artifacts (Lee [0048]), thereby increasing the ability of Oh in view of Meer and Subramaniyan to generate accurate global motion in the presence of blocking artifacts.

24.   Regarding claim 25, Oh in view of Meer and Subramaniyan and further in view of Lee discloses the system limitations of this claim as discussed above with respect to claim 10.

25.   Claims 15-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jinzenji et al. (US Patent # 6,977,664 B1) in view of Szeliski et al. (US Patent # 6,348,918 B1).

26.   Regarding claims 15-16,

Jinzenji teaches:

        A method according to claim 12 (as shown above),

Jinzenji fails to teach:

        wherein the selecting step comprises:

        calculating the mean pixel value of the available pixel values;

        calculating the L1 distance between each available pixel value and the calculated mean pixel value; and

select the pixel value with the median L1 distance for use in a background

panoramic image.

select the pixel value with the maximum L1 distance for use in a foreground

panoramic image.

Szeliski teaches:

wherein the selecting step comprises:

calculating the mean pixel value of the available pixel values (Szeliski: col 8, line

57-65; taking the mean of the color or intensity values);

calculating the L1 distance between each available pixel value and the calculated

mean pixel value (Szeliski: col 8, line 57-65; where the averaging is weighted by the

distance of each pixel from the nearest invisible pixel); and

select the pixel value with the median L1 distance for use in a background

panoramic image (Szeliski: col 8, line 57-65; using the median technique).

select the pixel value with the maximum L1 distance for use in a foreground

panoramic image (Szeliski: col 8, line 57-65; the simplest technique is the median

technique, but many others exist. This portion of Szeliski discloses blending specifically

for a background image. This portion of Szeliski also discloses blending generally.

Instead of using the median technique for blending background pixels, a maximum

technique is obvious for blending foreground pixels. This is because foreground pixels

are most different from background pixels).

It would have been obvious to a person having ordinary skill in the art to combine the teachings of Szeliski with Jinzenji. Using the blending technique of Szeliski would smooth out disparities of the panoramic image of Jinzenji, thus creating a panoramic image with increased image quality (Szeliski col 9, line 6-8).

27. Claims 26-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oh et al. (International Pub. No. WO 00/70879) in view of Meer et al. (Meer et al., "Robust Regression Methods for Computer Vision: A Review", International Journal of Computer Vision, 6(1):59-70, 1991) as applied to claim 17 above, and further in view of Jinzenji et al. (US Patent # 6,977,664 B1).

28. Regarding claim 26,

Oh in view of Meer teaches:

A system for generating panoramic images from a motion-compensated inter-frame encoded video sequence, comprising:

a system for global motion estimation between frames of a motion-compensated inter-frame encoded video sequence as claimed in claim 17 (as shown above), and further arranged to provide global motion estimations for each frame (Oh: pg 9, lines 13-19);

Oh in view of Meer fails to teach:

panoramic image generating means for generating at least one panoramic image

representing the frames of the video sequence using the global motion estimations thus

determined.

Jinzenji teaches:

panoramic image generating means for generating at least one panoramic image

representing the frames of the video sequence using the global motion estimations thus

determined (Jinzenji col 8, line 32-56; a provisional sprite <panoramic image> is

generated).

It would have been obvious to a person having ordinary skill in the art to combine

the teachings of Jinzenji with Oh in view of Meer. Using the panoramic generating

means of Jinzenji would allow for creation of a panoramic image based on the global

motion of Oh in view of Meer, thereby allowing a user to implement an established use

for global motion.

29.   Regarding claim 27,

Jinzenji teaches:

wherein the panoramic image generating means is further arranged in use to:

select a particular frame of the sequence as a reference frame, the plane of the

reference frame thereby being a reference plane (Jinzenji col 8, line 32-56; the

reference coordinate system which is for the reference frame);

for each frame other than the reference frame, accumulate the global motion estimations from each frame back to the reference frame (Jinzenji col 8, line 32-56; each original image of the arbitrary frames is mapped to a reference coordinate system which is for the reference frame);

warp each frame other than the reference frame onto the reference plane using the accumulated global motion estimations to give one or more pixel values for each pixel in the reference plane (Jinzenji col 8, line 32-56; frame warping occurs when frames are mapped to the reference coordinate system using global motion so as to insert or overwrite pixels); and

for each pixel position in the reference plane, select one of the available pixel values for use as the pixel value in the panoramic image (Jinzenji col 8, line 32-56; a pixel value of a point is obtained from pixel values which exist in the same point).

30.   Regarding claim 28,

Jinzenji teaches:

wherein the panoramic image generating means is further arranged to select a substantially median pixel value from the available pixel values for use in a background panoramic image (Jinzenji col 10, line 8-11; for a plurality of pixels which are mapped to the same coordinates, a median value of the pixels is selected as the value of the coordinates of the provisional sprite).

31.   Regarding claim 29,

Jinzenji teaches:

wherein the panoramic image generating means is further arranged to select a substantially most different pixel value from the available pixel values for use in a foreground panoramic image (Jinzenji col 8, line 47-51; using a threshold to select the most different pixel).

32.   Claims 30-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oh et al. (International Pub. No. WO 00/70879) in view of Meer et al. (Meer et al., "Robust Regression Methods for Computer Vision: A Review", International Journal of Computer Vision, 6(1):59-70, 1991) and Jinzenji et al. (US Patent # 6,977,664 B1) as applied to claim 27 above, and further in view of Szeliski et al. (US Patent # 6,348,918 B1).

33.   Regarding claim 30 and 21,

Oh in view of Meer and Jinzenji teaches:

A system according to claim 26 (as shown above),

Oh in view of Meer and Jinzenji fails to teach:

wherein the panoramic image generating means is further arranged to:

calculate the mean pixel value of the available pixel values;

calculate the L1 distance between each available pixel value and the calculated mean pixel value; and

select the pixel value with the median L1 distance for use in a background

panoramic image.

select the pixel value with the maximum L1 distance for use in a foreground

panoramic image.

Szeliski teaches:

wherein the panoramic image generating means is further arranged to:

calculate the mean pixel value of the available pixel values (Szeliski col 8, line

57-65; taking the mean of the color or intensity values);

calculate the L1 distance between each available pixel value and the calculated

mean pixel value (Szeliski col 8, line 57-65; where the averaging is weighted by the

distance of each pixel from the nearest invisible pixel); and

select the pixel value with the median L1 distance for use in a background

panoramic image (Szeliski col 8, line 57-65; using the median technique).

select the pixel value with the maximum L1 distance for use in a foreground

panoramic image (Szeliski col 8, line 57-65; the simplest technique is the median

technique, but many others exist. This portion of Szeliski discloses blending specifically

for a background image. This portion of Szeliski also discloses blending generally.

Instead of using the median technique for blending background pixels, a maximum

technique is obvious for blending foreground pixels. This is because foreground pixels

are most different from background pixels).

It would have been obvious to a person having ordinary skill in the art to combine

the teachings of Szeliski with Oh in view of Meer and Jinzenji. Using the blending

technique of Szeliski would smooth out disparities of the panoramic image of Oh in view

of Meer and Jinzenji, thus creating a panoramic image with increased image quality

(Szeliski col 9, line 6-8).

Double Patenting

34.   The nonstatutory double patenting rejection is based on a judicially created
doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the
unjustified or improper timewise extension of the "right to exclude" granted by a patent
and to prevent possible harassment by multiple assignees.   A nonstatutory
obviousness-type double patenting rejection is appropriate where the conflicting claims
are not identical, but at least one examined application claim is not patentably distinct
from the reference claim(s) because the examined application claim is either anticipated
by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140
F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29
USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir.
1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422
F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163
USPQ 644 (CCPA 1969).
        A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d)
may be used to overcome an actual or provisional rejection based on a nonstatutory
double patenting ground provided the conflicting application or patent is shown to
be commonly owned with this application, or claims an invention made as a result of
activities undertaken within the scope of a joint research agreement.
        Effective January 1, 1994, a registered attorney or agent of record may sign a
terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with
37 CFR 3.73(b).

35.   Claim 11-16 are provisionally rejected on the ground of nonstatutory

obviousness-type double patenting as being unpatentable over claims 6-11 of

copending Application No. 10/535,420. Although the conflicting claims are not identical,

they are not patentably distinct from each other because Application No. 10/535,420

discloses claims 11-16 ('420 claims 6-11; '420 pg 24, line 6 – pg 27 line 7).

    This is a <u>provisional</u> obviousness-type double patenting rejection because the

conflicting claims have not in fact been patented.

Conclusion

    Any inquiry concerning this communication or earlier communications from the

examiner should be directed to JAMES PONTIUS whose telephone number is (571)

270-7687. The examiner can normally be reached on Monday - Thursday, 8 AM - 4 PM

est..

    If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Mehrdad Dastouri can be reached on (571) 272-7418. The fax phone

number for the organization where this application or proceeding is assigned is 571-

273-8300.

   Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see http://pair-direct.uspto.gov. Should

you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a

USPTO Customer Service Representative or access to the automated information

system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/J. P./
Examiner, Art Unit 2621

/Andy S. Rao/
Acting Supervisory Patent Examiner, Art Unit 2621
July 6, 2009